

The Physical Society is to be congratulated on arranging such a successful conference at a time when a large proportion of those actually engaged in ionospheric research could be present. The publication of the report, which is promised soon, will add considerably to the value of the Conference.

CARBON-14 DATING SYMPOSIUM IN COPENHAGEN, SEPTEMBER 1-4

IT is now generally recognized that the method of dating organic material by assay of radiocarbon content is of outstanding promise for many sciences, particularly archaeology and the aggregate of archaeology, geology and biological sciences which can be called 'Quaternary research'. The demonstration of its feasibility by W. F. Libby was followed by the initiation of many projects for radiocarbon dating, centred in North America and in Europe. Those most concerned in North America have already had more than one joint meeting, but European workers have remained relatively isolated from one another until this year, when they attended an informal symposium in Copenhagen.

The meeting was sponsored by the Danish Rask-Ørsted Foundation, and was actively supported by the organizing committee of the Copenhagen carbon-14 project which has been operating since 1951 under the chairmanship of Dr. Therkel Mathiassen. The secretary of the meeting was Dr. Hilde Levi, head of the Copenhagen carbon-14 dating laboratory, and, through her, invitations were sent to the several European centres known to have carbon-dating plant working or under construction: two or three members attended from each centre.

The first day's discussion opened with consideration of technical matters associated with solid-carbon counting by methods essentially those of W. F. Libby, as now being used in Copenhagen and in Rome, and in preparation at Trondheim and Stockholm. This was followed by accounts of the processes being worked out for the use of gas-counters with the carbon in the form of carbon dioxide (Groningen and Heidelberg), acetylene (Royal Institution, British Museum and Harwell jointly, and Cambridge), and methane (Göteborg). Many interesting aspects of the production of the counting gases were considered, more particularly the hydrocarbons.

It became perfectly clear that gas-counting both by carbon dioxide and by acetylene is more expeditious and somewhat more sensitive than screen-wall counting of elemental carbon, and may be expected to displace the older method, which nevertheless is now producing a large part of the published datings. Only brief reference was made to scintillation counting.

Discussion on the third day concerned sources of error inherent in the samples and the techniques, and precautions which they involve, and some brief consideration of datings secured by European projects. It was apparent that, while cross-checking of samples could usefully be considered in this way, the implications of several unpublished datings were far too wide for the limited personnel and time of the meeting.

Some consideration was given to the standardization of form of publishing results, and to dating

projects requiring international organization. It was agreed that a second symposium ought to be held, at least to deal with technical advances, within the next year or so and that *rapprochement* should be sought with American colleagues.

This first meeting proved extraordinarily profitable to all participants, not least because of the close personal discussions made possible by its small size and informal nature. The hospitality of our many Danish hosts and the skill and tact of Dr. Levi in organizing the meeting were beyond praise.

H. GODWIN

HYDERABAD CENTRAL LABORATORIES FOR SCIENTIFIC AND INDUSTRIAL RESEARCH REPORT FOR 1952

THE annual report for 1952 of the Central Laboratories for Scientific and Industrial Research, Hyderabad*, which has only recently been published, refers to the slow progress of the new building, towards the completion of which the Government of India sanctioned a non-recurring grant of 5 lakhs of rupees. Research in the Oils and Entomology Sections during the year included the preparation of insecticidal material from sitaphal seed and soap-making trials of sitaphal oil, the dehydration of castor oil, continuous preparation of tricinolein, indigenous cotton-seeds and their oils, separation of fatty mixtures and the antioxidant properties of aca-catechin. The Fibre and Paper Section examined the possibilities of manufacturing filter and board paper from tailor wastes and of using casuarina wood pulp as a diluent for cotton-seed linters. The Fuel Section made a rapid survey of the distribution, classification and available reserves of Hyderabad coals and continued its systematic physical and chemical survey. A pilot-plant investigation of the briquetting of non-caking coals has been undertaken and, in connexion with the installation of the Lurgi low-temperature carbonization plant, the weathering properties of Hyderabad coal and its oxidation in a fluidized bed, the recovery of tar acids and hydrocarbons from low-temperature tar and of benzole from carbonization gas are being studied.

The Heavy Chemicals and Fertilizers Section has been concerned with the utilization of feldspar and iron pyrites, and of sulphates for the manufacture of sulphuric acid as well as the preparation of activated charcoal from groundnut hulls. A systematic study of Hyderabad clays was made in the Ceramic Section as well as a study of their utilization as fireclay refractories. The work of the Organic Chemistry, Pharmaceutical and Drugs Section included studies of potential synthetic analgesics, including quinazoline derivatives and a new synthesis of pethidine, studies on Indian turpentine and alkaloids and attempts to synthesize compounds with sex hormone activity. In the Biochemistry Section, fermentation studies included the production of citric acid from sugar-cane molasses and of itaconic acid from glucose, using *Aspergillus terreus*; non-fermentation studies included the production of lævulinic acid from sugar-cane bagasse.

* Central Laboratories for Scientific and Industrial Research, Hyderabad. Annual Report, 1952. Pp. xi+57. (Hyderabad-Deccan: Osmania University Press, 1954.)